V-22
Program Update

ATRB

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Multi-Mission Tiltrotor Aircraft

Joint Service

USMC

AMPHIBIOUS ASSAULT

SUSTAINED LAND OPERATIONS

SELF-DEPLOYMENT

360 MVs

USSOCOM

LONG-RANGE SPECIAL OPERATIONS

CONTINGENCY OPERATIONS

EVACUATIONS AND MARITIME SPECIAL OPERATIONS

50 CVs

USN

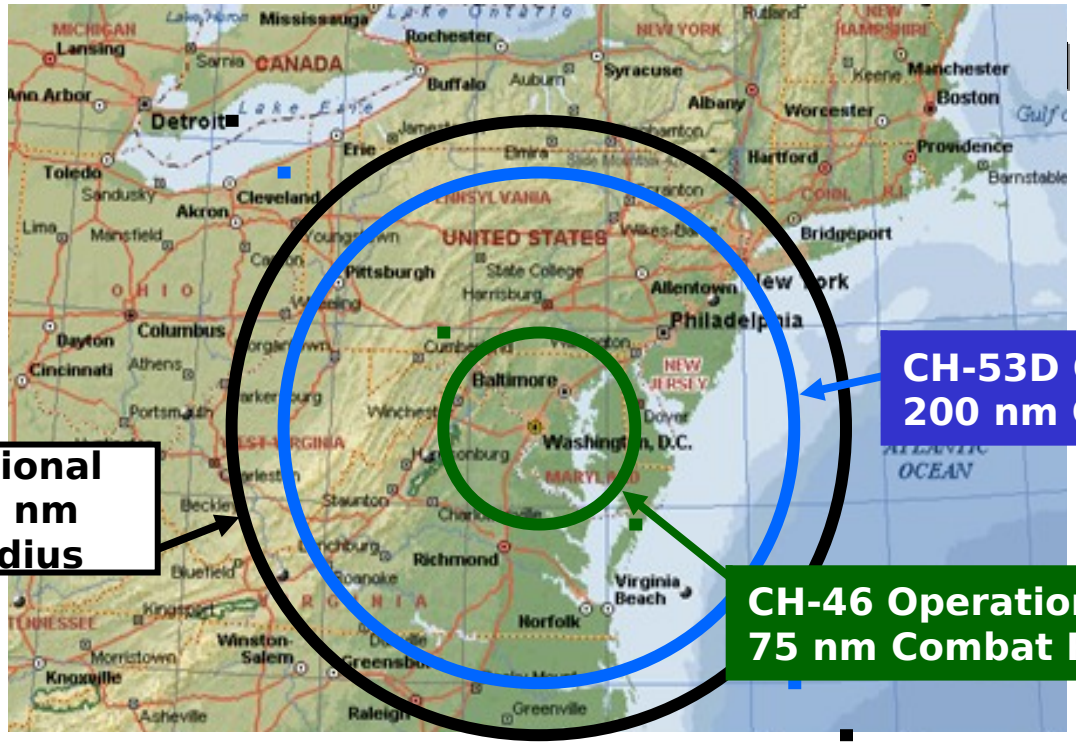
PERSONNEL RECOVERY

FLEET LOGISTIC SUPPORT AERIAL REFUELER

SPECIAL WARFARE

48 MVs

MV-22 Mission: Vertical-lift, assault support of combat troops, supplies, and equipment



V-22 Operational Limit 240+ nm Combat Radius

CH-53D Operational Limit 200 nm Combat Radius

CH-46 Operational Lim 75 nm Combat Radius

Lifting a 975-Marine Battalion

Landing Zone Distance 75 nm

CH-46	**MV-22**
Sorties: 82	Sorties: 41
12 Aircraft: 8-9 waves	12 Aircraft: 4 waves
≈ 16 hrs	**≈ 8 hrs**

Landing Zone Distance 200 nm

CH-53D	**MV-22**
Sorties: 41	Sorties: 41
12 Aircraft: 4 waves	12 Aircraft: 4 waves
≈ 16 hrs	**≈ 8 hrs**

CV-22 Mission: High-speed, long-range, vertical-lift infiltration and exfiltration for Special Operations Forces *in a single period of darkness*

1980

Rescue Force:

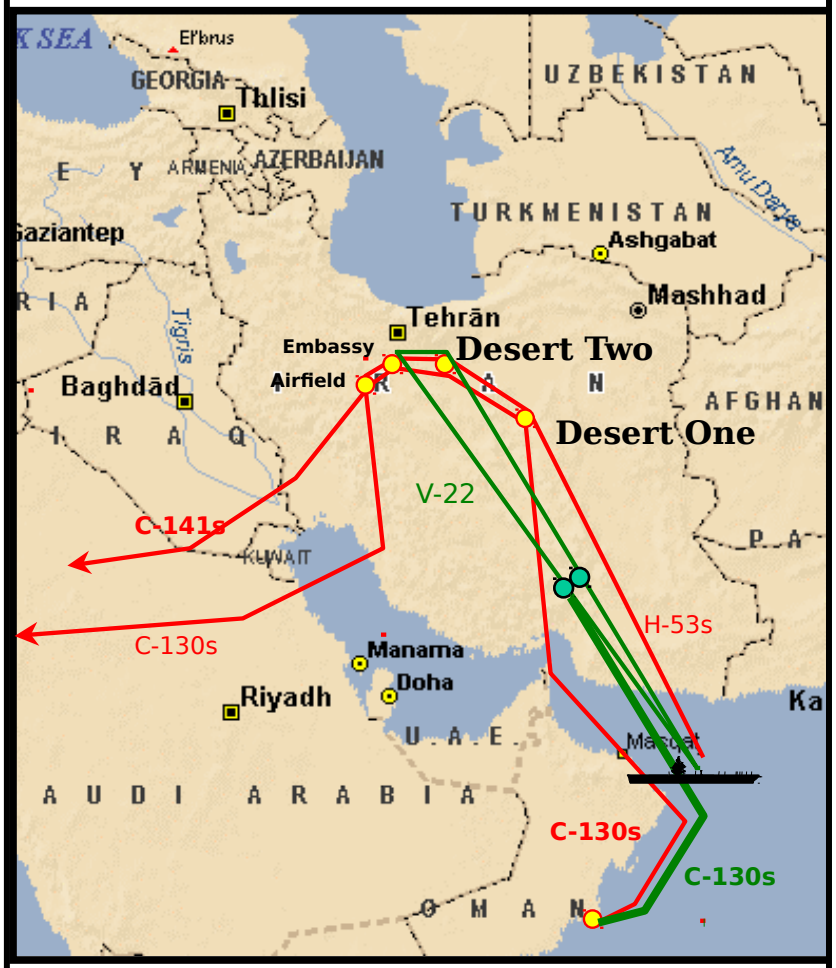
- 8 RH-53
- 6 C-130
- 3 C-141

Concept of Operations:

- Depart from ship, proceed to "Desert One." Link-up with C-130's and refuel.
- Continue flight to "Desert Two". Hide for 22 hours.
- Rescue force drives to Tehran, rescues hostages, returns to "Desert Two."
- C-141's arrive at "Desert Two". CH-53's destroyed by Rescue Team.
- Rescue party and hostages fly to safety on C-141's.

CH-53E Distance = 880 nm

Mission Time = 35 hours



2009

Rescue Force:

- 11 CV-22
- 6 C-130

Concept of Operations:

- Depart ship, aerial refuel enroute. Arrive at "Desert Two".
- Option to fly or drive to Tehran to rescue hostages.
- Once hostages are recovered, fly to safety.

CV-22 Distance = 15[illegible]

Mission Time = 8 hours

V-22 Joint Program Schedule

Program and Acquisition Strategy

	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13
MV-22												
Development												
Block A "Safe and Operational"					DT/OT							
Block B "Enhanced Maintainability"									DT/OT			
Block C "Mission Enhancements"												
			OT IIF	OPEVAL II								
T&E												
			MS III			IOC						
Delivery												
Block A (QTY)			15	14								
Block B (QTY)					9	8	15	?				
Block C (QTY)									?	?	?	?
CV-22												
Development												
Block 0/10 Development					DT/OT							
Block 20 Development						IOT&E			DT/OT			
			ATA	PRTV 1	2			IOC				
Delivery												
Block 0/10 (QTY)					2	3	2	?				
Block 20 (QTY)									?	?	?	?
	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13

152 through FY11
MV / CV mix TBD

MV-22 Description

- Block A – Safe and Operational
  - Line clearance improvements
  - Flight control software changes
- Block B – Enhanced Maintainability
  - Effectiveness and suitability improvements for the fleet
- Block C – Preplanned Product Improvements

CV-22 Description

- Multi-mode Terrain Following / Terrain Avoidance Radar
- Additional internal fuel
- Suite of Integrated RF Countermeasures
- Directional IR Countermeasures (Laser Turrets)

MV & CV Commonality

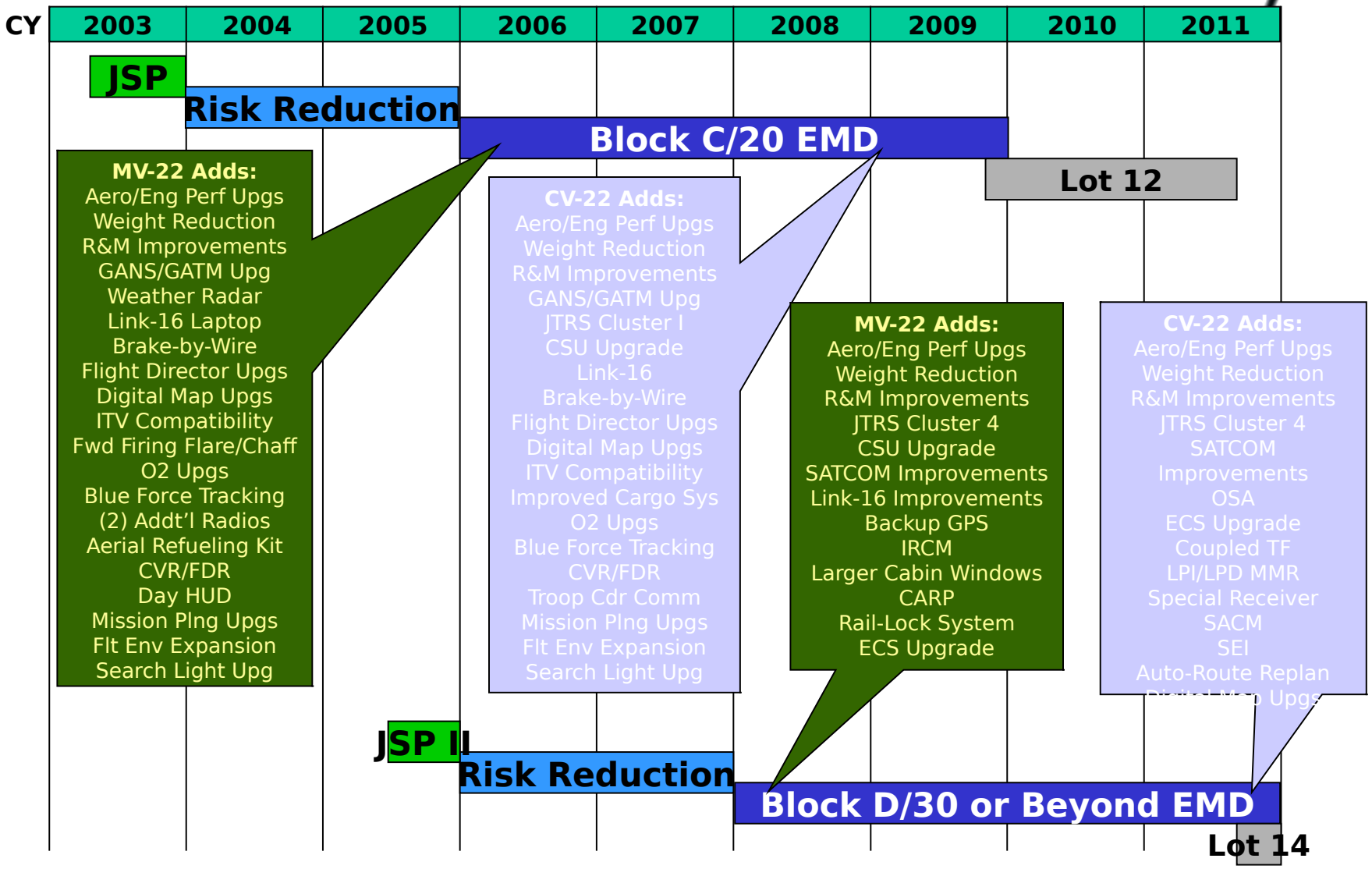
- Airframe 90%
- Avionics 20 - 40%
- Propulsion 100%

Flight Test Accomplishments

- Safe and methodical event driven flight test program
- Full stable of test aircraft – 9
- 1349 flight hours since return to flight
  - Flight control system software
  - Line Clearance
  - HROD
  - Low airspeed combat maneuverability
  - Shipboard compatibility (incl roll on deck)
  - Austere landings
  - External loads

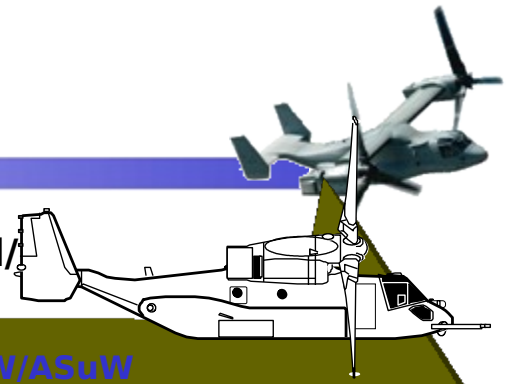
  - Formation flight
  - IR survey
  - Emergency landing profile demo
  - Low airspeed critical azimuth
  - TF/TA 300-200-100 ft

Draft Block Upgrade Roadmap



New Missions & Technologies

A look beyond current mission set



International/ Civil

Coast Guard

Air Force

Army

Navy

National Guard

SOCOM

USMC

Special Operations

Amphibious Assault

Fleet Support

Fleet Logistics

Gunship

Command & Control

Combat Rescue

Homeland Security/Defense

Coastal/Border Patrol

Aerial/Ground Refueling

MEDEVAC

Reconnaissance/ Surveillance

Advanced Weapons

AEW

ASW/ASuW

Electronic Warfare

Executive

Growth

2000

2005

2010

2015

2020

Supporting Tech Insertion

- CSEL
- Coupled Terrain Following
- Improved Flight Director
- Blue Force Tracking
- Open Systems
- Expanded Communications
- Link-16
- Health Monitoring
- Improved Electronic Warfare
- Improved Cargo Handling
- Improved Map Interfaces
- Upgraded Oxygen Systems
- GANS/GATM Systems
- Wire Detection
- Improved Propulsion Systems
- Heads-Up Display
- Improved Aerodynamics
- Brake-by-Wire
- Auto Route Replan

Build Confidence

- **Quality**
  - Reliability, maintainability, sustainability
  - Manufacturing
  - Business practices
- **Capability**
  - Operational effectiveness
  - Interoperability
  - Mission enhancements
- **Affordability**
  - Mitigate risk & optimize ramp (152 aircraft through FY09)
  - Plan for investments in Cost Reduction Initiatives
  - Accelerated Multi-year Program to FY07

Vision

One team working with mutual trust and respect to provide an effective, suitable and affordable V-22 weapon system to the Warfighter.

Guiding Principles

- ***Act as One V-22 Team***
  - Maintain shared vision and goals
  - Institutionalize high performance IPTs
  - Have fun
  - Establish partnerships with all stakeholders
  - Assign clear RAA to foster empowerment
  - Develop & execute plans jointly
  - Understand requirements, issues & solutions
  - Manage through common/shared databases
  - Recognize and reward teamwork
  - Promote work/life blend

- ***Promote Respectful, Open & Honest Communication***
  - Straight talk (no whining, no hidden agendas)
  - Actively listen
  - Share information
  - Encourage innovation
  - All ideas get fair play
  - Encourage Help Needed
  - Seek to understand

- ***Enhance Credibility and Preserve Trust***
  - Uncompromising integrity
  - Perform to plan
  - Support team decisions (no “end-runs”)
  - Surface issues early
  - Only make promises you can keep
  - Realize all have the best intentions for V-22
  - Honor confidentiality
  - Respect others’ position
  - Manage expectations

- ***Promote Performance Excellence***
  - Safety and Quality in all we do
  - Focus on affordability and cycle time reduction
  - Improve our people, products and processes
  - Conduct periodic assessments
  - Seek, share and apply lessons learned
  - Apply best practices
  - Manage a healthy business
  - Be solution-focused